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THE WATER ISSUE

Manitoba’s water at risk?
North Dakota is about to turn the tap on
Are we ready?

+ URBAN WATER SURVEY
+ THE PHARMA DEBATE
We need to make it happen.

The University of Lethbridge,

A leader in water research

Hontela

Dr. Alice

Hontela is a member of the Department of Geography, and a Tier 1 Canada Research Chair in aquatic ecosystem health. His research focuses on the ecological consequences of contaminants on aquatic environments, and how community makeup affects nutrient efficiency. His findings contribute to our understanding of ecosystem services, and can be used to inform policy and conservation measures.

Rasmussen

Dr. Joseph

Rasmussen’s research is focused on one of the most pressing issues of our time, the health of aquatic ecosystems. His work in aquatic toxicology examines the effects of man-made sources on the environment, and how communities of organisms respond to these changes. Rasmussen’s work helps to clarify the efficiency of ecosystems and their responses to stressors.

Johnson

Dr. Dan

Johnson is a member of the Department of Environmental Sciences. His research in Ecotoxicology examines the effects of pharmaceuticals and personal care products in the environment. His work helps to clarify the risks posed by these products, and how they can be managed to protect our health and the environment.

Klein

Dr. Kurt

Klein leads the Alberta Ingenuity Centre for Environmental Research. His research focuses on improving the sustainability of irrigation, particularly in the Canadian prairies. His work has in-depth knowledge of ecosystem management, and how to balance ecological and economic goals.

Rood

Dr. Stewart

Rood is a member of the Department of Agriculture, and a Tier 1 Canada Research Chair in cottonwood ecosystem health. His research focuses on the interactions between cottonwood trees and the environment, and how they can be used to improve water-use efficiency and ecosystem health.

Ecosystem is the rich diversity of habitats, wildlife, and resources found in a given area. It is the foundation of all life, and it is our responsibility to ensure that it is protected and preserved. Real people making a real difference at the University of Lethbridge.
WE RELY ON EXPERTS WITH A DEEP UNDERSTANDING OF THEIR ENVIRONMENT.

A sustainable story: keeping our waters clean and clear.

At Shell Canada we help experts like Henri keep their passion for the environment alive.

KEEPING OUR WATERS CLEAN AND CLEAR.

SWAB THE DECK

COVER STORY: TONY A. HARDERS

FOR RESPONSIBLE BUSINESS - SPECIAL WATER ISSUE 2006

WATER AT RISK

SPECIAL REPORT: RICK SPENCE & JIM GOULASH, ETC.

THE GREAT CANADIAN WATER ADVENTURE

WATER RX

A SUSTAINABLE STORY

CLEAN WATER FROM OIL

www.shell.ca
As we soaked in the inspired comments many of you took the time to send us in response to our inaugural Corporate Knights—Waterlution Special Water Issue 2004, we found we had uncovered just the tip of the iceberg of what water means to us as Canadians. So, well-received and a few months later over an early morning (dehydrating) coffee meeting, we admitted that the appetite for another special water issue was growing. That the regular CK readers and all those others we managed to reach out to with The Water Issue—schools, in-company educational programs, MPs, municipal leaders, environmental NGOs, social entrepreneurs, international friends, and more—were thirstier for more water knowledge.

Questions floating about included: Does Canada have a vision for water? How will it be managed—across regions, provinces, and with our neighbour to the south? What are companies doing or not doing about our water? What new water innovations do we need to know more about? How is it all connected? And what can I, as a consumer, do to make a difference?

Complex problems. For the first time in our lives, our water—the essential element of life—may truly be at the mercy of our capacity to make collective, healthy and timely decisions. While it, as always, our water is clean, clear and plentiful, we are being challenged in ways that are only beginning to seep through in our understanding, and we are having to solve problems for which we have no clear guidelines... this scares a lot of people and the natural inclination is to fall back on proven problem-solving techniques rather than seek out new ways of thinking and acting to get out of an increasingly complex whirlpool of reactions.

To unravel the complexity and find out what you might really want to know next, we convened a series of interactive workshops inviting water practitioners and stakeholders, forward-thinking and creative minds to explore what is it that really shifts behaviour around water?

We traced the number of “fat diets” over the past 30 years to discover a multitude of approaches from low-carb to pilates to blood-type diets... yet what we think (and we hope we are right) is that what is beginning to emerge is a more systemic, long-term view of how to keep ourselves healthy—a genuine lifestyle change. We must start looking at our water the same way.

The big picture for water in Canada is pretty clear, although it runs violently upstream from the conventional wisdom. Canada’s cup of freshwater is half empty, and we are selling it “cheap as dirt,” as the OECD chided. Why aren’t we doing more to protect it? Because we think our freshwater cup is full. Let’s flush that catch-22 down the flapperless toilet. Canada does not have, as is commonly bandied about, 20 per cent of the world’s renewable freshwater: we have 6-9 per cent and most of this (60 per cent) flows north into the Arctic Ocean or Hudson’s Bay, quite a ways from where 90 per cent of our population lives. In Denmark, where consumer water prices are five times the average, Danes use 32 per cent less water than the average Canuck. But it’s hard to charge people for water when almost one in two Canadian households has no water meter.

There lies tremendous potential in restoring a healthy and sustainable relationship with water in Canada should a savvier political coalition see how clean drinking water, like and acting to get out of an increasingly complex whirlpool of reactions.

We’re talking about a set of national standards (not flimsy guidelines) enshrined in a Drinking Water Safety Act (something proposed but not adopted by the Mulroney gov- ernment) that has two core principles: water is a fundamental human right and should be protected as such, and when—it is consumed beyond the basic human requirement—is a product and should be priced as such for consumers AND industry. As David Boyds points out, the feds already regulate bottled water, so taking the “it’s a provincial jurisdiction issue” cop-out just doesn’t “hold water.”

Like any piece of legislation, it will only be as good as the enforcement. That means at least doubling up today’s environmental enforcement budgets and providing redress for public citizens to take environmental criminals to court.

It may sound radical, but it’s within reach for all of Canada’s water to be safe for swimming, fishing, and drinking (at freshwater sources) by 2015. If we twist our thumbs, someone might push us off this high stakes diving board, and there’s no guarantee the pool won’t be dry when the impact hits. Now, we are in a position of strength. Let’s take the plunge while we can see the deep blue, using this Water Issue as a learning tool, a conversation starter, and an idea generator.

Cheers,
Karen, Tatiana and Toby Water Issue 2005 co-editors
TEN WAYS TO... KEEP POLLUTANTS OUT OF THE WATER

by Guy Dauncey

1. KEEP YOUR HOUSEHOLD POLLUTANTS OUT OF THE WATER
It’s so easy to be thoughtless. The paint thinner you pour down the drain; the fertilizer that leaches into the storm drain. It doesn’t go “away.” It all ends up in someone else’s home: a river, lake or ocean. Where fish and other marine creatures breathe, and for whom we create a home. A home safe from pollutants of our chemicals twist their hormonal systems, and turn male fish into females. How would you like it if they poured their wastes down your chimney?

www.protectingwater.com/storm-drains.html

2. KEEP YOUR BUSINESS POLLUTANTS OUT OF THE WATER
“Can you hose that spill antifreeze down the drain, Joe?” For millions of litres, our waste washes down the drain, and nature disposed of it easily (with help from the bears). Today, we use chemicals everywhere, and when we’re careless, they end up in the water. Lead, cadmium, zinc, perchloroethylene, oil. If your business doesn’t have a pollution prevention program, and use closed loop systems, it’s part of the problem. Smart cities such as Halifax and Victoria have introduced source control programs to help you clean up your act. Why wait for them?

www.protectingwater.com/business.html

3. PROTECT YOUR CREEKS, STREAMS, WETLANDS AND MARSHES
When pollution gets into a river or stream, the vegetation along the bank works to filter it. If there is any vegetation, that is. So do wetlands, swamps and marshes. Nature tries to re-balance ecosystems, to remove pollution, but when we drain the wetlands, farm right up to the

river’s edge, and clear the shoreline vegetation to make way for homes and boats, we make it impossible for them to do their job.

www.livingbywater.ca

4. FARM THE LAND SUSTAINABLY
Remember, before it was a farm, it was a blanket of vegetation, a forest. In both instances, deep roots hold the soil together, and slowed the flow of the rain, keeping soil and sediment out of the rivers. When farmers embrace sustainable farming, with ponds and wetlands, cover crops, contour farming, and conservation tillage, ideally with organic methods, they prevent agricultural non-point pollution. Forests, parks, recreation areas, probably Viagora, too. The entire North Sea contains measurable quantities of clofibrate acid, used to control cholesterol. Hospitals are a major source of the problem. Whatever you do, don’t flush unwanted drugs down the toilet. This is a new problem that we’ve hardly begun to address. Methadone, barbiturates and charcoal filters are called for.

www.rachel.org/bulletin/
bulletin.cfm?Issue_ID=501

5. PRACTICE WATERSHED STEWARDSHIP
Here’s an eye-opener: students create a model of their local watershed complete with forests, farms and factories, to see where the water flows. Then, having seen the cycle, they go and paint fish graffiti by the storm drains, a gesture of support. Community watershed stewardship groups can educate the public, train their members to how to test the water for contaminants, monitor for endocrine disruptors, and act as the eyes, heart and brain of the watershed.

www.waterworthstewardship.ca

6. PHASE OUT COAL-BURNING POWER PLANTS
Coal? What’s that got to do with water? When burning coal, it releases mercury that’s been locked up for millions of years. The mercury falls into lakes and rivers, where it can turn into methyl mercury, and be swallowed by fish, birds, and human beings.

www.wgc.ca/en/manage/poll/e_regs.htm

7. KEEP THE DRUGS OUT OF THE WATER
You’d be astonished to see what’s getting into the water and not being caught by sewage treatment. Birth control hormones, tranquilizers, painkillers, anti-inflammatories. Pfizer, chemotherapy agents; probably Viagra, too. The entire North Sea contains measurable quantities of clofibrate acid, used to control cholesterol. Hospitals are a major source of the problem. Whatever you do, don’t flush unwanted drugs down the toilet. This is a new problem that we’ve hardly begun to address. Methadone, barbiturates and charcoal filters are called for.

www.rachel.org/bulletin/
bulletin.cfm?Issue_ID=501

8. CRACK DOWN ON ILLEGAL DISCHARGES
Over 1200 chemical compounds have been found in the Great Lakes, many of which are persistent toxic chemicals. Remember, fish now suffer from tumours and lesions, and their reproductive capacities are decreasing. Over the past 30 years, however, the sensible use of regulations has caused PCB and DDT levels in seagulls to fall. Governments should demand mandatory groundwater testing around hazardous activities, and the pre-treatment of industrial wastes; use the precautionary principle for all new and existing chemicals, and impose higher fines, that are meaningful.

9. CREATE A CLEAN WATER LEGACY
What do you do when the damage is done, and you want to get the pollution out of the water? Clean Water Action, a non-profit, is proposing a Clean Water Legacy program which will raise $80 million a year by imposing a $3 monthly fee on municipal sewer hook-ups and septic systems (with waivers for low income families), and tiered fees for businesses. They would use the money to clean up all the polluted lakes, rivers and streams, and prevent future water pollution. Just $3 a month to clean your lake’s waters? That has to be the best deal in town.

www.cleanwateraction.org/mnw/cwl.html

10. SAIL THE SEVEN SEAS
A boat can be a filthy thing, when its owners toss their garbage overboard, flush their sewage, and empty their bilges into the ocean. Just half a litre of oil can pollute a whole acre of surface water. A man-made oil slick can be even worse, with its fuel sprays, spilled off paint residues from cleaning, and the use of toxic anti-fouling paint.

www.georgiastrail.org/greenboat.php

DUTCH KOFFIE

THE COFFEE FOOTPRINT
Coffee is, in dollar terms, the most important agricultural product traded in the world and producing coffee requires a lot of water. It is also a large tea industry, although the trade volume in monetary units is much less than in the case of coffee.

In a study run on the “water footprint” of coffee and tea in the Netherlands, the volumes of water required to drink coffee and tea were calculated with the underlying aim of raising awareness of the effects on our consumption patterns based on the use of natural resources.

In the period of the study (1995 to 1999), it was found that for drinking one standard cup of coffee in the Netherlands about 4.0 litres of water was needed, by far the largest part for growing the coffee plant. A standard cup of coffee is 225 ml, which means that we need more than 1,100 drops of water for producing one drop of coffee. Total coffee consumption in the Netherlands requires a total of 2.6 billion cubic metres of water (or almost 700,000 Olympic-sized swimming pools). The Dutch people account for 2.4 per cent of the world coffee consumption.

The production of one cup of tea requires 35 litres of water in average.

Source: University of Twente, The Netherlands

www.waterfootprint.org/WaterFootprintCalculator.html

WATER REFLECTIONS

OLYMPIC ATHLETES ANSWER "WHAT WATER MEANS TO ME"

“Every day, I spend up to eight hours either on or around water. I have gained a sense of the way that the water moves under neath me, where the water is coolest, what the weather is like, and where I can row to escape the water and pollution. So you might ask, what does the water mean to me? Just a moment to clean your lake’s waters? That has to be the best deal in town.

Our children grow up.

Now, as a mother with children, I think of water from the perspective of drinking water. I have different thoughts than I did as an athlete. As an athlete, my relationship with the water was almost spiritual, and it was a very intimate relationship that I had with the lake that I rowed on. I was lucky to know that the water did not have a bad smell, and you begin see the city very differently when you spend your time on the lake in the city. It’s a completely different perspective that you get; quiet opposite than the perspective that the people in the city get. Now as a mom, I think about drinking water. I think about the fact that we dump raw sewage out into the ocean. I live by the ocean and I think about oil spills and how they affect me. I think about being a parent, one’s perspective shifts into thinking about water more as a resource and something that needs to be protected.”

— Silken Laumann, rower

“Without water I would not have ice to skate on and perform the one thing I love doing the most. Water is not only the prime surface, it’s also the main source of my training keeping me hydrated during long, long training periods. Water is essential to our environment and our well-being. I am at heart a genuine gardener and animal lover and water is critical to all living things. To keep our bodies of water clean and safe is a must in order to keep the Earth as healthy as we try to keep our own bodies!”

— Liz Manley, figure skater

“Both my recreational love and my family are tied up with snow, you realize the importance of managing the resource, protecting the resource. Especially living in Calgary, which is a semi-arid environment, and a part of the world that’s growing dramatically; where water means skiing in the wintertime and often whole seasons; where the Bow River offers one of the leading fishing locations in the world; where we are dependent on a healthy, clean river flowing through the city of Calgary. I have been further sensitized as that because of the drought in recent years, particularly in Alberta and Saskatchewan, and that also impacts our economy. It has hit home really well and it’s all interconnected.”

— Ken Reed, skier
Preserving the planet’s forests through partnerships that work

Alcan Inc. and the Prince of Wales International Business Leaders Forum (IBLF) congratulate the Forest Stewardship Council, winner of the inaugural US$1-million Alcan Prize for Sustainability. The FSC was selected by an international panel of sustainability experts from a field of 400 qualified submissions from 75 countries.

In selecting the 2004 winner, the Adjudication Panel said, “The FSC has pioneered an innovative, market-based approach to responsible forest management by linking forest management to the market through certification and product labelling. This ambitious sustainability model works through strong partnerships with a range of stakeholders around the world.”

Alcan and the IBLF also applied the six short-listed candidates that were awarded US$15,000 grants to study cross sector partnerships in a post-graduate course accredited by Cambridge University.

They are:
- ApproTEC, U.S.A.
- Comunidad Indígena de Nuevo San Juan Parangaricutiro, Mexico
- Friends of the Earth, Ghana
- FUNEDSIN, Ecuador
- Global Action Plan, U.K.
- Social Change Assistance Trust, South Africa

A world leader in promoting sustainability as a business management concept, Alcan created the Alcan Prize for Sustainability to recognize outstanding contributions by not-for-profit, non-governmental, and civil society organizations to achieving economic, environmental, and social sustainability. Alcan has committed to nine years of funding in the first round of the Alcan Prize, with the hope that it will continue for many years to come.

To learn more about the Alcan Prize for Sustainability, please visit www.alcanprizeforsustainability.com

“Ready or not, here we come.” That is North Dakota’s battle cry in the newest tug-of-war of US-Canadian relations. Forgot BSE-infected mad cows, softwood lumber and Ballistic Missile Defence. A new issue has rocketed up the totem pole: Devil’s Lake. This lake in North Dakota used to be called God’s Lake up until 150 years ago, when, as the local legend goes, some Native Americans took a crappy canoe to the choppy waters and were never seen again. Ever since, this volatile lake has been known as Devil’s Lake.

Canadians are incensed about a planned outlet that will funnel 170,000 litres per minute of Devil’s Lake water into the Sheyenne River, through the Red River and into Lake Winnipeg, Manitoba. It is concerned that the introduction of the polluted water and invasive species from these closed basins could have dire consequences for Canada’s largest freshwater fishery—the Red River and Lake Winnipeg fisheries generate 50 million per year—among other things.

Manitoba, true to Canadian tradition, is calling for the planned outlet to be referred to a commission: the International Joint Commission (IJC).

What scares Canadians about the Devil’s Lake outlet aside from the potential assault on the water quality of Lake Winnipeg (the world’s tenth-largest freshwater lake) is the willingness to throw away an international treaty that has worked so well. Revolted by unilateralism when it clearly works to your advantage is one thing, but choosing it when it does not suggests a total abandonment of multilateralism, as a point of principle. Fifty-one of 53 disputes referred to the 96-year-old International Joint Commission have been resolved to both sides’ satisfaction. Every Great Lakes Mayor—and Governors from Ohio to Minnesota—support Canada’s position, which is to refer the Devil’s Lake outlet to the IJC before any water is allowed to flow, largely because they know the shoe could fit on the other foot someday.

“It’s [the Devil’s Lake outlet] a question of having a legally-regulated, law-abiding, relationship with our powerful neighbour,” said Michael Byers, Canada Research Chair in Global Politics and International Law at the University of British Columbia.

With all this hububalo, I figured it was time to take a swim in the lake and see just what in the devil is going on.

Water is also a touchy issue for North Dakota. Governor Hoeven is chair of the State Water Commission. Simply saying the word “Garrison” brings a degree of excitement similar to the “Who is John Galt?” common vernacular in Ayn Rand’s Atlas Shrugged.

The Garrison Dam was completed in 1935. Long story short: it was a massive public works project in which North Dakota lost a lot of land to flooding in return for which they were supposed to get water from the Missouri River to the Red River basin. But, for a variety of reasons, it never happened. The Garrison diversion has now been on the books for over 80 years; in 1934 a North Dakota newspaper laid it all out in a map. Like the right of return for Palestinians, getting water out of Garrison has been a elusive prize of every major North Dakota politician since the 50’s.

Partially because surrounding wetlands have been drained and with it mother nature’s water level regulator, Devil’s Lake water level is extremely volatile. In the 1950’s, it was completely dried up. As recently as 1999, it was so low that the residents were...
trying to find a way to bring water in so that the fish stocks wouldn’t freeze in the winter. While today’s problem is flooding, when the next dry cycles come around the problem will be the opposite. Given the outlet from Devil’s Lake, this water cocktail of foreign biota would accumulate in Lake Winnipeg. Dakota Governor Schafer made the Garrison vision clear in 1997 in a letter to the North Dakota Congressional delegation that stated, “Everything possible must be done to keep the lake viable in congress as a long term option.”

WHAT IN THE DEVIL IS GOING ON!

During Manitoba’s past provincial election, clean water was a central theme that helped the NDP sell to victory. Premier Gary Doer has promised to leave the water better than they found it. Ads on the local radio for ordering free 12-page Clean Water Guides says “clean water for me, for you, forever.” Unique in Canada, Manitoba has a cabinet level position for water, with Minister Steve Ashton at the helm as Minister of Water Stewardship (he hopes that Ottawa follows suit in consolidating the water file as he has to deal with any one of the 28 different water issues that he has to talk to Ottawa about water issues). As I waited for the Minister in his office, he handed me his “Bible,” a list of 800 pages with a list of documents to show all the people that are lining up behind Manito- ba to have the Devil’s Lake outlet referred to the International Joint Commission. The friends of Manitoba letter-writing club included all the Great Lakes Mayors in conjunction with all of the Great Lakes Commission (representing Illinois, Indiana, Michigan, New York, Ohio, Ontario, Pennsylvania, Wisconsin, Quebec’s and the federal government). My thanks to the Canadian Centre for Policy Alternatives, to Dalton McGuity; and Assembly of First Nations National Chief Phil Fontaine. The recipient of the media attention was the Governor General of Canada, Michael D'Odoldezza Rice to Paul Martin to the Inter- American Commission on Human Rights. The thesis of the paper was that the Great Lakes, to be the Great Grandson of William H. Taft who originally signed the Boundary Waters Treaty back in 1909, has also come out as a victory for the environment; this is an honor to those that such issues be referred to the International Joint Com- mission (IJC) for an environmental assessment.

Manitoba’s stand against the Devil’s Lake outlet goes to the heart of the water issue, demonstrating what can go wrong and the need to properly protect this essential resource.

Manitoba is receiving support for a law from the IJC from an ever-growing list of supporters, including all in Ontario, Quebec, Ohio, Minnesota, Missouri, the Great Lakes Water Commission states and environmental groups on both sides of the border. If North Dakota is allowed to go ahead with this project, we believe this would signal that there are no conse- quences for sending polluted water across the border.

Manitobans know first-hand of the po- tential for water to cause considerable social and environmental upheaval, as experi- enced in the massive 1950 flood.

As a result of that disaster, the prov- ince constructed the Red River Floodway, which channels river water around the city to prevent significant flooding of our capital city.

In 1997, although there never was sig- nificant damage, the floodway saved Win- nipeg from what the IJC and the Century. Ring dikes in communities along the Red River protected towns and served as a re- minder of the need for greater protection of our communities. In order to increase this environmental protection, we have invested $655 million to expand the Floodway. We have also invested over $10 million in the Red River Valley to provide additional flood protection.

Furthermore, Manitoba has been taking steps to deal with the many challenges that water quality and availability which exist in the Great Lakes Basin. We know that biological continue to threaten water quality and supply. We are moving forward with a comprehensive strategy to address water management.

In the fall of 2003, we established the Department of Manitoba Water Steward- ship under the direction of Minister Steve Ashton, making our province the first juris- diction in Canada with a department solely responsible for protecting and managing water. This move allowed us to bring together all parts of government which dealt with water into one cohesive working body which oversees everything from drinking water and ecosystems to ir- rigation and flood control.

With this new department, and the new pieces of legis- lation which encompass our vision and strategy for this new department. The first new law is a joint Canadian and US drink- ing Water Safety Act, passed in 2004. This important legislation allowed us to invest nearly $50 million in new water and sewer infrastructure, including Drinking Water and hired 12 new drinking water officers to enforce this tough new law.

The second piece of legislation is the Water Protection Act, currently being discus- sed in the Manitoba Legislature. This proposed law would be the first of its kind in Canada and would officially recognize the critical role water plays in the well-being of all Manitobans and in the future.

The Water Protection Act will take a broad approach, dealing with water pro- tection at its source, whether or not it’s used for drinking. We hope to preserve the ecological integrity of our rivers and lakes while acknowledging the social and eco- nomic impact of the federal government’s high-quality water in the future. It calls for the creation of water quality management plans, for presentation to the federal planning authorities to control and restrict activities which might put water at risk.

Both pieces of legislation stem from the IJC’s “Conserving the Great Lakes—Ring of Fire” plan; the IJC has formulated in 2003. This strategy fulfills a commitment to protect and preserve our water through stronger legislation and has provided a framework for all our actions to date.

As we push ourselves forward in an ef- fort to protect the water quality, and meet the challenges of the 21st century, it is easy to lose sight of how water underpins our economy, our communities, and our health. We know that further progressing, aquatic life and water resources are essential to the health of our ecosystems.

The importance of respecting and pro- tecting these ecosystems is underscored by the outpouring of support from neighbour- ing provinces and states, and the interna- tional community. The most recent group to join Manitoba in promoting the diversity project are the mayors of cities of Great Lakes and the St. Lawrence River. They are concerned that if the project goes ahead, the Great Lakes ecosystem would be compromised.

The threat is real and the ensuing consequences of the Great Lakes ecosystem and ground water for a variety of activities including pulp and paper production, min- ing, smelting, manufacturing and distill- ing, cooling and heating.

Water is one of our indispensable re- sources. Keeping it safe means protecting its current uses, and future needs. We know that more must be done to deal with the negative effects of human activity on wa- terways. Manitoba’s Lake Winnipeg, one of the world’s largest freshwater lakes, is showing the signs of decades of human activity.

With its beautiful beaches and wide open waters, Lake Winnipeg is one of Canada’s greatest freshwater resources. Recreation and tourism activities generate over $100 million every year, in addition to the com- mercial and sport fisheries, and hydroelec- tric dams.

More than 800 commercial fishers oper- ate on Lake Winnipeg, generating over $20 million annually. Sport anglers find many places to drop a line while enjoying the lake’s beauty.

Lake Winnipeg is also the world’s third largest lake by surface area and power for all Manitobans. This abundance of clean renewable energy provides Manitob- a with the opportunity to develop a clean power for all Manistobans. This abundance of clean renewable energy provides Manitob- a with the opportunity to develop a clean power for all Manistobans.

We, however, have seen a rise in the level of harmful nutrients like nitrogen and phos- phorus, which is a concern for the poten- tially dangerous levels of algae which af- fect our recreation and health, and threaten the survival of the species that rely on the lake for their livelihoods.

Our goal for Lake Winnipeg is to reduce the nitrogen and phosphorus levels to pre- 1950 levels. Unfortunately, the Devil’s Lake outlet has the potential to add to these lev- els. In February 2003, we announced the closure of the Devil’s Lake outlet to reduce the level of harmful nutrients in the lake. The Lake Winnipeg Stewardship Board is holding a workshop of that year to help us meet this challenge.

The board is now working with industry, communities, cattagers and neighbouring provinces to identify the sources of these nutrients and determine the best ways to reduce the nutrient loads. The Manitoba government recently released its interim re- port and is holding public meetings around the province.

The new challenge for Canada and the world is ensuring the future of the Great lakes. This will require the cooperation of many governments, organizations, and individuals. It is a daunting task, but we are facing challenges.

In short, just about everybody with a dog in the Boundary Waters Treaty and Inter- national Joint Commission seemed to be on Manitoba’s side.

Finally, Minister Ashton arrived, saying that he was being weighed down by more let- ters and documents to properly protect this essential resource.

No one has bigger water issues staring them in the face than Manitoba.

by Gary Doer, Premier of Manitoba
Ashton told me. "It really comes down to a different view of the world. On North Dakota’s side, transferring water from one basin to another is acceptable. For most of the rest of the civilized world, there’s a general understanding over the past couple of decades that there can be catastrophic consequences in transferring water from a sub-basin—in this case, North Dakota’s—with two new proven parastas, and one foreign fish species, Adlerston punished home. "I was very much opposed to raising the stakes of the outlet. ‘This is a very aggressive approach. I don’t think people realize how seriously Manitoba takes this. We are friendly Manitoba, but we’re no doormat.’"

If North Dakota takes the lone star approach, there will be a price to pay, Ashton suggested. “If we have to go to court, we’ll find vendues and we will lose.”

Ashton is in fighting spirit now (which is still peaceful for a Manitoban NDP). "There are many rivers that flow from Canad…"

Pretty soon, Ashton said, "the wet cycle will be replaced by a dry cycle, and one of the key elements we’re concerned about is the fact there are other inlets on the border. A lot of times there is a problem and people will say do something about it, but doing something sometimes creates a far greater number of problems in other ways."
To find and develop our natural resource wealth, Canadians have always been daring innovators. In Northwestern Ontario, for instance, visionary prospectors braved the rugged and lonely hills to search for iron ore. In sub-zero temperatures they drilled through rock, water and ice to investigate ore deposits buried far beneath Atikokan, 600 km west of Thunder Bay. To build Atikokan’s Steep Rock and Caland iron mines in the 1940s and 1950s, construction crews built dams, drained lakes, dredged silted lake bottoms, and changed the course of mighty rivers.

Under pressure, Canadians display such superhuman efforts when it comes to our most precious resource: water. En- dowed with 6 per cent of the world’s fresh water, Canadians use (and waste) more water than just about anyone on earth—and pay the world’s lowest prices for the privi- lige. In summer, for instance, three-quar- ters of treated household water gets sprin- kled willy-nilly on lawns to keep them as green as the neighbours.

But these carefree attitudes are starting to change. Increasingly, city-dwellers (es- pecially in southern Ontario, Alberta and central BC) are being warned to ration wa- ter use. Since seven Ontarians died of EC contamination in 2000, “Walker- ten” has become a symbol of ecological failure—and the dangers of farm runoff. And growing tidings of oil spills, acid rain, closed beaches and the cost of cleaning up polluted ponds are reminding Canadians from coast to coast that their rich heritage of fresh, clean water can no longer be taken for granted.

But it’s not just consumers who are ea- rly to preserve our water wealth. More and more, innovative entrepreneurs are devot- ing their energy and creativity to conserv- ing our water resources. From reclaiming polluted lakes to inventing new water-saving devices and showcasing environmen- tally friendly architecture and agriculture, these daring leaders are taking risks and turning heads in their quest to combine business success with a healthier environ- ment.

For Exhibit 1, look at Atikokan. Where engineers blasted and bulldozed 65 years ago to build North America’s biggest open- pit iron ore mine, nature and entrepre- neurship are now working hand-in-hand. The mines, closed 25 years ago, are revert- ing to lakes. And in Caland Lake (formerly the Caland Pit), entrepreneur David Lind- say has built a modest fish farm that has not only created much-needed jobs—but has transformed a sterile lake into a thriving ecosys- tem.

“When we started, it was a lifeless moon- scape around here,” says Lindsay, a Royal Canadian Navy veteran who also worked on East Coast drilling rigs before settling in Atikokan in 1984. “Today, it’s like Shan- griti. It’s just beautiful.”

Lindsay doesn’t take much credit for the transformation—nature cleans up pretty well when given a chance. But it was his vision that an aquaculture operation could succeed in an open-pit mine—and his re- fusal to give up when times were tough—that created the miracle of Caland Lake.

US financial interests developed Steep Rock Iron Mine in the 1940s to provide a secure source of iron ore during the fear- ful early years of the Second World War. In 1960, the Caland mine was opened to develop a similar ore body one kilometre to the east. But by the 1970s, steel mar- kets were declining. By 1980 both mines had closed and the water pumps were shut off—guaranteeing that both pits would again become sterile lakes as rain and groundwater refilled the pits. Atikokan’s population dwindled as its miners left for other regions. When David Lindsay, a na- tive of Niagara Falls, ON, whose wife hailed from Atikokan, moved to Atikokan to raise his young family, he’d have to cre- ate his own job. All he needed was a ven- ture no one else could see.

In the mid-1980s, aquaculture was on the rise. Government studies said demand for fresh fish was growing faster than sup- ply, and fish farms, producing salmon and trout, sprang up on the East and West Coasts. Lindsay looked at the grizzly, green- ish ponds north of Atikokan and wondered if they could make suitable sites. He read up on the subject and started experiment- ing to see if fish could survive in these left- over lakes.

Surrounded by steep slopes of mine tail- tings laced with pyrite, which bleeds sulphuric acid into the water, the Steep Rock Lake proved too acidic to support fish life. But Caland Lake was different. Although an arm of the original N-shaped Steep Rock Lake drained by the mining crews, it had never been geologically disturbed. Its banks were reduced runoff, while a limestone island in the middle of the lake—a mountain of calcium carbonate—countered the acid in the water. Although the near-shore water wasn’t fit for man or trout, Lindsay found the water in the centre of the 1.5-km lake was good enough to support commercial quantities of fish.

Lindsay formed a worker’s co-op, har- vested wood to build floating fish pens in the middle of the lake, and used government loans to buy the netting. He figures he built a $1-million operation for just $200,000. “When I bought it I was crazy and stupid,” he says.

They weren’t far wrong. Atikokan Fish Company’s growth instead of ever de- stable and markets erratic. First a distribu- tor in Thunder Bay went belly-up, and then another in Daluth, Minn. But by 1999, Atikokan’s fish were stocked in 1991. They were processing 253,000 kg of trout a year and generating sales of nearly half a mil- lion dollars.

But not just a business was being created at Caland Lake. The lake itself was taking on new life. On the 100,000 to 300,000 tons of steel slag dumped into the lake each year, there was a growth of aquatic plants and animals—began appearing in the lake, followed by hordes of voracious daphnia (tiny freshwater shrimp). “The daphnia were so thick it looked like a snowstorm,” recalls Lindsay.

Other minnows and other fish—stocked by fishermen or transplanted through groundwater—showed up to eat the daph- nia. Other wildlife quickly migrated to the centre of Caland Lake. Including frogs, snakes and birds. Nature was back—in all its carnivorous glory. “We got the biological engine working,” says Lindsay. “It was an awesome thing to behold.”

Normally, putting all those fish and all that food in one lake can starve it of life-giv- ing oxygen. But Caland Lake is up to 800 feet deep—and the differing densities of its water at the surface and on the bottom keep the layers from mixing. As a result, the fish farm was helping a weak ecosys- tem, not harming a healthy one. Indeed, researchers from Thunder Bay’s Lakehead University studied the phenomenon with great interest, spurred on by governments and mining companies that wanted to learn what to do with old tailings ponds.

But in 2002, Atikokan Fish suffered a huge setback. After overcoming falling fish prices and rising transportation costs, the lake couldn’t support a monsoon-like rain that sent torrents of water, mud and pollution water from other tailing ponds into Ca- land Lake. The slimy mixture, nearly two years old, killed off the most suitable young fish scheduled for harvest in 2003 and 2004. The lake cleaned itself in two months, but the damage was done. Lindsay took it all—about $200,000 in debts, Atikokan Fish went bankrupt in 2003.

Lindsay persevered. With the help of a few friends, he bought back the as- sets of the fish farm and started again. This time, the pens are close to shore—the biggest open-pit fish farm in North America’s biggest companies. But he had only three months to pay its $200,000 in debts. Atikokan Fish went bankrupt in 2003. He doesn’t let the loss get him down. With the help of a few friends, he bought back the assets of the fish farm and started again. This time, the pens are close to shore—the biggest open-pit fish farm in North America’s biggest companies. But he had only three months to pay its $200,000 in debts. Atikokan Fish went bankrupt in 2003. He doesn’t let the loss get him down.

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on just six litres. So there’s no flapper, no leaks and no adjusting the volume, since the bucket only holds six litres.

The flapperless toilet was developed by Arnold Hennessy of Belleville, ON, an inventor who designed a power flush toilet for Fluidmaster Inc., one of the world’s leading producers of toilet-repair products. While working on that project, Hennessy learned that conventional toilets weren’t living up to their water-saving potential, so he set himself to design a more efficient, self-adjusting toilet. Teaming up with his nephew Philip, he devised the flapperless toilet and formed Niagara Flapperless International to distribute the product across Canada. Since 1999, Niagara has sold more than 700,000 toilets in Canada.

How do you compete with the “big guys” in bathroom fixtures? Niagara positions the flapperless toilet as a high-end, low-maintenance product. At a suggested $149.95, it’s not the cheapest toilet in the market, but Wilson claims it pays for itself through savings on maintenance and water use.

To explain the technology, Niagara retails its toilet mainly through Home Hardware dealers, service-oriented retailers who are more likely to engage their customers than self-sell retailers such as Home Depot.

Wilson, an experienced mining executive and start-up entrepreneur, joined Niagara to help turn it into a one-product company into a supplier of diversified water conservation products, such as showers, shower heads and timers that let your kids know when they’ve spent too much time in the shower. Some of those products are sourced from other companies, while others will be developed in-house. “Our long-term mission is to continue to grow and provide effective water conservation solutions in Canada and internationally,” says Wilson. “We will always be on the cutting edge.”

Still, retail is a small part of Niagara’s plan. It hopes to sell most of its toilets through direct channels, especially to big customers such as real-estate developers. Homestead Land Holdings, for instance, is a landlord with 20,000 units across Ontario that hopes to save big on maintenance and water costs by retrofitting its units with the Flapperless system.

To become better known in its market, Flapperless is publicly supporting energy conservation initiatives. For instance, it supported the United Nations “Year of Fresh Water” initiative in Canada, which included nearly 8,000 water conservation events over 2003 and 2004. It’s also lobbying for tighter toilet standards across Canada, as well as pushing for more municipalities to install water meters in all homes—as user-pay is a necessary step toward conservation. While Wilson says these initiatives stem directly from the founders’ personal commitment to water issues, he admits it’s also good business. “If we can make the public aware of the need for water conservation, we’ll get our share of the demand.”

It takes time, but many companies are learning that environmental leadership is good business. At Jackson-Triggs, an executive points out that retrofitted units like Niagara-on-the-Lake, ON, sustainability is being incorporated into day-to-day operations. “It makes a lot of sense,” says co-founder Donald Triggs, who grew up on a farm in Manitoba. “We are increasingly in an environment where we have to think about doing everything we can to protect what we have.”

That’s bold talk for an icon of Canadian business. Triggs is president and CEO ofavin Corp., the Canadian subsidiary of Vincor International Inc., the Mississauga-based company that is now North America’s fourth-largest wine producer—and often cited as a model for how Canadian businesses must evolve from local producers to world leaders. By investing in quality wine, Vincor and its brands—Jackson-Triggs, Inniskillin, and Sumac Ridge—have won numerous awards and earned global respect for Canadian wine.

But you don’t turn around a $560-million company overnight. While Vincor didn’t start out as an environmentally-conscious company, it is moving that way as its principals—who consider themselves in the agricultural business—rediscovers the art of growing with nature.

Jackson-Triggs first statement to that effect was its new winery in 2001. Designed to reflect the natural processes of winemaking while impressive tourists, “We put the drip at the very base of the vine, so we don’t have to water the whole area.”

The building itself has a green roof, a fact learned from the Nk’on band’s guidelines on what the building’s systems are to be conservation-oriented. While the winemaking process is not the result, the existing systems are designed with conservation in mind, such as the Nk’on band’s guidelines on what the building’s systems are to be conservation-oriented. As a result, the 43,000-sq.-ft. winery has become a poster boy for sustainable design (see Corporate Knights, Summer 2005).

A few miles north and east of Toronto, the Niagara on the Lake, winery is especially sensitive to water issues. An on-site storm water collection system diverts run-off to a wetland to filter and reduce runoff, while a high-pressure spray wash system and low-flow water fixtures reduce water consumption. As well, a fine-spray system cuts down water use while maintaining moisture levels in the underground "barrel room." That prevents the wine barrels from drying out, so the all-important alcohol doesn’t leach out of the wine and into the wood.

This leads to a number of these ecological touches don’t cost much. “It’s not just environmentally friendly, it’s more efficient,” he says. Financially, “it was non-negative—neutral to positive.”

But Jackson-Triggs’s winery is only the beginning. At the nearby ClowJardane winery, Triggs explains, is investing in developing new technologies to replace chemicals, such as a teas made from local grasses that discourages the pesky leaf hopper, a plant-sucking insect that reduces vine growth. As Jordanne refines its organic tools, Triggs hopes those processes will spread to other Vincor operations. “It’s pretty heavy,” he says. “But we’re moving up the knowledge ladder.”

But in British Columbia, Jackson-Triggs is working with a local Native band on a vineyard in an unusual location. Although it overlooks scenic Lake Okanagan, it is one of Canada’s few deserts. As a result, water conservation is key.

The 11,000-acre operation includes sensors that constantly monitor the vineyard, assessing how much moisture the vines need at any given time—eliminating unnecessary watering. As well, its drip-irrigation system reduces chemical use, which “is good for the environment. It’s a step in the right direction.”

On a personal note, Triggs says, “My ancestors are custodians, rather than owners. Our ancestors to my ancestors to their descendants to my ancestors to their descendants to my ancestors to their descendants to my ancestors to their descendants to my ancestors to their descendants to...”

Everyday chemical products are found in tap water and in the softening and water purification systems and the water purification safeguards are powerless to stop them. We put fluoride in the water on purpose. Aspirin and Prozac get there on their own.

BE AWARE!

Every pharmaceutical ingredient thus far approved by the US Environmental Protection Agency (EPA) and the Food and Drug Administration (FDA) are classified as toxic. What’s more, all pharmaceutical products found in water will be considered toxic. Pharmaceuticals are usually found at the part per trillion level, or lower, equivalent to about one cent in one billion dollars. “However, this could become significant as fresh water supplies diminish,” says Dr. Christian Daugherty, Head of the Environmental Protection Agency.

Dr. Virginia Cunningham, Director of Environment, Health and Safety Product Stewardship for GlauxSmithKline for 25 years, says that if she can tell, there...
is no immediate danger. "I have not identified [GSK] compounds that I would say pose any significant risk to the environment or to people—however, I say that based on current methodology. So I won't say that there is no risk, but I have not been able to identify any." Nor have scientists at Health Canada or researchers in academia found any evidence yet for a risk to human health.

But just because we don't know about any risks, say many environmentalists and scientists, does not mean that risks aren't necessarily there, especially considering that these molecules have all been designed to have potent, specific biological effects. Many of these environmentalists and scientists are concerned about subtle effects that may result from chronic, long-term exposure. Effects that may be very difficult to detect.

"One of the things that is so interesting and disturbing at the same time is that, when you go to a pharmacist and you get your prescription, you get a long list of things not to take with it," says Dr. Gail Krantzberg, an environmental toxicologist with the International Joint Commission, an independent binational organization that monitors the Great Lakes. "Certain drugs are contraindicated—but the mixture is out there, you're taking it all in... that in my mind is cause for serious concern."

One thing that all the experts agree on: we really do not know yet what the effects of pharmaceuticals are on human health at this point in time.

**ANTIBIOTIC RESISTANCE**

Although there appears to be no short term risk from the direct consumption of pharmaceuticals in tap water, there may be an immediate, indirect risk posed to human health: antibiotic resistant bacteria. Antibiotics are found in Canadian and international waters, and evidence is mounting that they can foster the spread of dangerous pathogens in our waterways.

Around the world, levels of resistant bacteria have been increasing steadily for the past few decades. Antibiotic resistance levels for human diseases in Canada can be as high as 40 per cent (such as for E. coli resistance to ampicillin), but in other countries (including the US) the rates can be much higher. According to the Canadian Committee for Antimicrobial Resistance (CCAR), in Taiwan and Hong Kong resistance rates can be as high as 90 per cent for some strains. In general, rates of resistance in most strains of bacteria appear to be increasing at about 2.5 per cent a year.

Antibiotics kill bacteria—but some bacteria are naturally resistant to the drugs, just as some humans are naturally resistant to a few diseases. Sometimes, an antibiotic treatment kills all the normal bacteria, leaving resistant ones behind to spread in their wake. It is widely recognized by experts around the world that antibiotics are being needlessly prescribed. According to Dr. John Conly, Director for the CCAR, between 50 and 80 per cent of the time that an antibiotic is prescribed, the actual cause of illness is a virus, which cannot be treated with antibiotics.

In addition to this is the substantial use of antibiotics in livestock. On dense factory farms these drugs are given to animals for the treatment and prevention of illness and as ‘growth promoters.’ It is estimated that in North America about 25 million pounds of antibiotics are given to livestock—but in Canada there is no system for tracking the purchase of veterinary drugs so we have no hard data on livestock use. "But a conservative estimate would be a 100 fold greater use for animals," compared to what is given to our human population, says Conly.

The waste from the 70 million chickens, swine and cattle in Canada is either drained directly away, or is used as fertilizer in agriculture—again, either way, the antibiotics and the pathogens leach into the water eventually (about 75 per cent of antibiotics fed to livestock is excreted).

It is known that resistant microbes from animal feces can spread through the ecosystem through our waterways—in some US rivers, up to 50 per cent of the bacteria were found to be antibiotic resistant.

Now some evidence suggests that antibiotics excreted from the animals are also a problem because they can help maintain the populations of antibiotic resistant bacteria in the water. "I would hypothesize that the answer would be unequivocally yes, but the level of evidence required [to prove this] is difficult," said Conly.

**THREAT TO WILDLIFE**

Although Cunningham says that her research indicates no "risk to the environment," a number of toxicologists and biologists suspect otherwise.

Antidepressants for example have been the target of a number of studies looking at environmental risks. Fluoxetine (Prozac) has been found in the brains, livers and muscles of fish living downstream from a sewage treatment plant near Dallas, Texas. It is not known yet what effect this has on the fish, or the humans that may consume the fish.

Controlled lab studies have shown that, albeit at concentrations higher than what is found in the environment, common antidepressants such as Luvox, Prozac, and Paxil can induce premature spawning in shellfish; Luvox, in fact, was found to be even more potent than natural serotonin. Although these studies do not necessarily prove any impact seen in the wild, they highlight an important point: we cannot predict how pharmaceuticals tested on and designed for mammals will affect other kinds of life; chemicals work in different ways in different animals. Hence, unless you know what you're dealing with, we might already be seeing impacts of pharmaceuticals on the environment and not know it.

But while most research provides only weak support for an environmental threat, one pharmaceutical has been quite strongly implicated as a threat to wildlife (somehow appropriately, the one designed to prevent the creation of unwanted life): ethinyl estradiol.

**SOMETHING FISHY IN THE WATER**

For more than a decade scientists have found that, in some rivers and for some species, the numbers of male fish have been dwindling, and scores of research point to one answer: hormonal disruptors.

If exposed to enough “female” hormones (like estrogen) early in life, male fish can switch gender and develop into female fish. Exposed to only small amounts of female hormones, male fish will only partially “feminize” and end up as “intersex,” with testicles that contain velliforms (a protein found in eggs), or even fully developed eggs and ovarian ducts inside the testicles (known as an “ovotestis”).

Feminized and intersexual fish were first identified in ponds downstream from sewage treatment plants in England in the early 1990s. Since then, wildlife biologists in Canada have found very high numbers of intersexual fish throughout the UK. In some rivers (such as the Aire river in Northern England), 100 per cent of the male [much] fish have some degree of feminization," says Dr. John Sumpter, an environmental scientist at Brunel University in London, England.

Although not quite as common, feminized fish are also found in Canada, such as in the Great Lakes.

Even though many non-pharmaceuticals, such as PCBs, heavy metals, and pesticides (including the insecticide DDT) mimic endocrine disrupters, ethinyl estradiol is a synthesized version of estrogen and the most commonly prescribed oral contraceptive in particular has been the focus of a great deal of research. Ethinyl estradiol is an estrogen-like compound, and they have been found in the Great Lakes.
“female” hormones in the world—all that is exactly what it was designed for. As Dr. Dana Kolpin, an environmental chemist with the US Geological Survey puts it: “It’s nothing more than one thing to mimic a hormone; it’s quite another to actually be a hormone.” Many researchers have found what they call a “threshold level—a level deemed inconsequential for most chemicals—ethiny1 estradiol can feminize male fish.

Dr. Joanne Parrott, a researcher with Environment Canada’s National Water Research Institute, has been doing controlled lab experiments for several life cycles (i.e., over several generations of fish) to examine the effects of birth control pills on the next genera-
tions. At one part per trillion, the contraceptive partially feminized the male fish and lowered their reproductive success; at three parts per trillion, “it was completely feminizing” she said.

Although this seems persuasive, Parrott, like most scientists, agrees that estrogen (and estrogen-like substances) that ethiny1 estradiol is the true culprit; there are hundreds of estrogenic chemicals in the environment, so it is difficult to tell which is really causing the problem in the wild out-
side of a controlled lab setting. With current scientific evidence, all Sumpter can really say is that “ethiny1 estradiol probably plays a ra-
tionally major role.”

Nevertheless, the UK’s Environment Agency, “believes that there is now sufficient evidence of harm to fish that a risk manage-
ment strategy is required for synthetic and natural estrogens entering the environment via domestic sewage.”

Most scientists are now starting to think that if pharmaceuticals are having an effect on wildlife (and possibly on humans), it is through their action in combination with other pollutants. Sometimes chemicals can work together (like different estrogen mimics), sometimes they can oppose each other’s actions (like, in some respects, estrogen and testosterone mimics). Widespread feminization of fish may in fact be a result of the vast numbers of estrogenic compounds that are present in the environment. Similarly, it may be a combination of pollutants working to-
gether that are responsible for many of the fish abnormalities we’ve been seeing over the last fifty years, such as population crashes in amphibians, the dramatic decline in human sperm counts, and a wide variety of cancers.

“We really need to understand the respons-
es of organisms to highly complex mixtures of chemicals, to figure out what is really happening,” says Sumpter.

DENIAL IS NOT A RIVER

Drugs in our water do not appear to be as pressing a health threat as other environ-
mental issues, but most policy makers and scientists agree that research and planning are necessary to make sure it doesn’t become a more serious problem.

To remove most of these pharmaceuticals from our drinking water, municipal water treatment plants would have to upgrade to newer, more expensive technologies, such as membrane filtration or ozonation. Most think this would be extremely costly, but Dr. Saad Jasin, CEO of the Walkerston Clean Water Centre and former Director of Wa-
ter Quality and Production for the Windsor Utilities Commission, says that upgrading the WH-Wees plant in Windsor to ozonat-
ion resulted in a net savings of $247,000 a year, as the plant no longer had to purchase disinfecting chemicals.

But upgrading our drinking water tech-
niques doesn’t help our wildlife exposed to sewage effluent coming out of wastewater treatment plants. “The only way to stop this is by providing us in Canada that we don’t do a particu-
larly good job on our sewage,” says Metcalfe.

“In northern Europe tertiary treatment is the norm, here in Canada the norm is secondary sewage treatment, and many of our major cities like Montreal, St. John’s, Halifax, and Victoria only have primary sewage treat-
ment. Municipalities do have the capacity to upgrade their facilities, it’s just that some of them don’t.”

Many environmentalists have suggested that pharmaceutical (and other chemical) companies be responsible for covering some of the costs of treatment upgrading, compar-
ing it to holding packaging manufacturers responsible for paying for the proper dis-
posal of their products. All the pharmaceuti-
cal companies interviewed for this story dis-
agree, saying that any private industry was to be held accountable, it would be one that produces considerably more contami-
nants.

To address the release of these substances in the first place, the Canadian government placed all drugs and cosmetics under the Canadian Environmental Protection Act in 1990 (prior to this they were covered by the Food and Drug Act, and hence exempt from environmental risk assessments for their ap-
proval).

Now all new drugs slated for release into Canada must be evaluated for their en-
rvironmental risk, and Health Canada and Environment Canada are currently reexamining the 22,000 or so chemicals previously approved for any environmental risk.

Both Health and Environment Canada conduct environmental risk assessments on each compound in isolation, not in combi-
nation as most scientists believe they ought to be. The test is simply that “it doesn’t cause any adverse effect.”

Canada’s ecological profile of pharmaceuticals in the environment is brand new and yet "remarkably blank," says Cunningham.

Researchers at Brixham have conducted research on the persistence of drugs in the environment, more efficient treatment plants, possible uses of green technology and green chemistry in manufacturing, and how to create drugs that are less easily excreted (a very difficult task). They are also investing $15 million in the creation of a new biologi-
cal wastewater treatment facility to minimize the release of pharmaceuticals from their Bristol, UK, manufacturing plant.

Dr. David Taylor, of Brixham Environmental Laboratories, “We think risk [from pharmaceuticals] is not a risk,” says Taylor, “but we wouldn’t go so far as to say there isn’t any. We’re interested in knowing whether there’s a problem or not.

Cunningham said that her real concern is that the media are “sometimes alarmist.” New research might “make people afraid to take their medicine,” she continued, “that’s why there’s concern about things like label-
ing [of pharmaceuticals with environmen-
tal precautions], you don’t necessarily want to cause people to feel reluctant to take the medicine that they need, and we’ve actually had conversations with the US FDA on this, their concern is to make sure that people get the medication that they need.”

WHAT CAN YOU DO?

Everthing you flush down the drain will end up in your rivers, lakes, oceans—and eventually, your drinking water.

The detection of these compounds at such small, frequent rates at the very least un-
derscores just how contaminated our fresh water is by our activities. Plasticizers, pesti-
cides, herbicides, nitrogen fertilizers, mer-
cury, and a slew of industrial chemicals are entering our environment at increasing higher rates, and resulting in environmental and health effects that are undisputable.

Zoe Cormier is a Toronto-based science writer.
IT AIN’T OVER ‘til the fad lady sings

Your Brain
This phenomenal engine of imagination and capacity to learn in the human species has led us to great achievements and also to the very mess we find ourselves in. In 2005, our global brain power is in a bit of a holding pattern, relying on old paradigm systems and structures to make new choices. Let’s expand the power of our brains to see the current needs of the world as different from the past, exercising our capacities for new decision-making systems and laying new neural networks to make sustainability a thinking-default. At 75 per cent water, your brain may need quality water to keep it functioning at its best.

Your Lungs
With every breath you take, you fuel your voice. It is when we find ourselves in that energetic and impassioned conversation about what matters most to us that we find our way through what’s been confusing and find our power for change. Can we find true engagement and coordinated action with others through conversation about what water means to us—from the practical to the ethereal? Let’s save breath and not voice protestately to deaf ears but speak our questions about and commitments to reversing the declining state of our water, and offer voice for those who cannot speak—our natural world and those without access to clean drinking water.

Your Heart
This is your perception centre, though often rationalised by your brain, and is the centre of right decision-making when you know in your heart that something makes sense. What does your heart tell you about the change you want to see? From simple acts of water conservation to engaging in wider systemic changes in our relationship with water, getting your heart on board and tapping into your deeper passion for a clean and healthy environment are key motivators.

Your Veins
The lifetime of your body, and carrier of blood—which is 83 per cent water. Some liken the water that flows through your planet to the blood that courses through our veins. A healthy body measures nearly the same blood flow throughout the body, yet our water ways are dammed up, concretized, re-routed and pushed through in ways that hardly mimic what makes sense to us as a healthy body. In what ways might we be constricting our water arteries and veins on this planet, and inducing high pressure and disease areas?

Your Stomach
A gateway to your health, what are you stomaching? Your gut is the trigger for true change and embarking on a more sustainable and healthy lifestyle, because you know it is the right thing to do! What do you consume each day and how does water make that which you consume? Ironically, good quality water is a necessary resource for food yet agricultural processes themselves often waste and contaminate the water.

Your Skin
At 70 per cent water your skin characterizes permeability and protection. How can we perceive to new ideas and the adaptations we need to make given possible future water scenarios? As a water abundant country, we think we can stretch ourselves endlessly but the stretch marks are showing. Can we re-in our water consumerism to a more healthy Canadian skin that allows us the permeability to engage with others with deeper water issues yet protect us from water abuse?

Your Kidneys
These are our bodies’ filtration plants. Nourished by sufficient and good water, these vital life sustaining organs remove waste products and excess water from the body thus maintaining our blood pressure and mineral balance and helping us eliminate toxins. How good are we at both eliminating toxins in our lives and nourishing ourselves? How good are we at doing the same in our industrial/manufacturing processes? Closed-loop thinking is inspiring innovation in the business world, creating a win-win situation where companies can be ‘kidneys’ to our larger ecological system.

Move Your Hips
In our body our centre of gravity is found behind our navel near the back bone. It is what helps us to be centred in the midst of chaos. What is our centre of gravity when it comes to our relationship with water? Can we come back to the fact that water is our essential life-line? We must not become lost in the complexity of water issues, where the gravity of the situation can pull us down and bring us to a place of non-action or stagnation. Move those hips! Water is life and flows in dynamic ways—as we should, in honour of the life it gives us.

Your Feet
A call to action! A facilitation methodology called Open Space Technology operates with a “law”—the Law of Two Feet or Law of Personal Mobility. It states that if you are neither leaving nor contributing, move somewhere to where you can. If your heart and brain are attuned to what’s happening with your water, what does it take to move your feet? If you’re stuck, turn to page 8 for some guidance.

W hole systems thinking is a process through which the interconnections between systems are actively considered, and solutions are sought that address multiple problems at the same time. As we realise that fad diets really don’t sustain the results we want to see, can we start thinking of how to get ourselves off the various “water diets” we are on? And find a more whole-systems, holistic and integrated approach to thinking and action that re-invent our relationship with water... into one that is healthier and more sustainable.
2015: A WATER ODYSSEY
A ten-year vision for Canadian Water

by R.W. Sandford

As the Chair of the UN Water for Life Decade for Action initiative in Canada, I have observed water issues first-hand all the way from the Queen Charlotte Islands to Newfoundland. In interviews the first question I am asked—and often the only one I am asked—is whether or not there really is a water problem in Canada. How can that possibly be?

In this writer’s estimation, what is happening presently in Canada with respect to our fresh water resources is very troubling. Governments are restructuring, downsizing and losing their organizational memory and capacity. Our most important institutions are becoming increasingly incapable of timely management of complex situations. Important responsibilities are being unloaded by default onto ordinary citizens who are seldom given adequate resources to properly manage them. There is little federal leadership and only a few provinces appear to be serious about going beyond rhetoric to properly fund innovative short-term solutions to water-related environmental and economic issues. In the absence of government support, citizen groups concerned about their watersheds are forced to appeal to corpora tions whose donations and corporate social responsibility frameworks are tied directly to marketing and public relations strategies. As a result, problems are presenting themselves faster than they can be addressed.

This circumstance is not likely to change until there is a widespread revival of species citizenship unified in the aim of integrative reform of our society’s major institutions. Until an energized citizenship can bring about that reform, citizens may have to rely on themselves to save what is important about where and how they live.

Personally, I would like to be optimistic about the future management of our fresh water resources in Canada. Let’s look forward ten years to examine the kind of human impact and climate change-related water problems that we can address if we act now. The year is 2015. The United Nations “Water for Life” Decade is coming to a close and Canadians are reflecting on what they have accomplished.

After ten years of hard work, it is now very clear that it was a wise idea to begin a reassessment of Canadian water use and management practices. Canadians got to work on specific actions that, in combination with new monitoring technology, started the country on the road to water sustainability.

The first thing that happened was that Canadians began to understand that water was the country’s most underappreciated and undervalued forest product. It became clear, in fact, that water was, in a great many cases, far more valuable than wood.

Scientists and environmental resource managers are beginning to develop a credible mechanism for determining how much water we should use in streams for environmental services. As a result of this research, it became possible to start thinking not just about how much water was in our streams, rivers and lakes, but the water that exists and provides benefits elsewhere in our wider ecosystems.

Mayors and councils across the country encouraged urban planners to move away from creating impermeable surfaces in our cities and replacing them with surfaces that slow runoff and restored biodiversity in streams and rivers.

Instead of piping away every drop of storm water, communities started retaining some to retain it and put it to work with impermeable surfaces. We encouraged communities to start maximizing buffer zones along streams and rivers instead of minimizing them. Communities continued to create wetlands instead of destroying them.

A process was developed that allowed monitoring and water delivery mechanisms to be invented and adapted internationally and in particular as a means of managing water efficiently on a watershed basis. New approaches to real-time computer assisted negotiation of water allocation and use prevented Canada from having to develop costly and adversarial American-style legal remedies to solve water use disputes. It also made it possible for communities to simply assume they could have their water.

An enormously successful national effort to energize an energized citizenry, can get over our cultural inertia by going back to basics. And the most basic of all basics is water. Follow the water. We know what to do. It is time to act. Our culture may be fueled by petroleum and lubricated by oil, but it runs on water. It is time Canadians realized that.

We can create a sustainable society, we have to follow our water. Follow the water. CK

Bob Sandford is an author and Chair of the United Nations International Decade “Water for Life.”
MOW, MOW, MOW YOUR LAWN... NOT!

We asked Canadian illustrator Greg Mably to depict a concept that represents one of the biggest household issues relating to water management. We believe he did great justice to the challenge: when people water their lawns in the summer, the demand on the municipal infrastructure puts an enormous strain on water resources, not to mention wastes treated household water supplies for which you pay. Your challenge: less water-hungry lawns, more local climate-adapted plants and shrubs. Ask your local garden centre representative for suggestions.

CANADA'S GREENEST ENVIRONMENTAL PROGRAM IS A HIDDEN GEM

The Prairie Farm Rehabilitation Administration

A few months ago, Corporate Knights asked professor Desmond Morton to name who, in his estimation, was Canada’s greenest Prime Minister. After playfully sending us back a list of PMs who had served truncated terms (presumably limiting the amount of damage they could have done), he picked R.B. Bennett because his government had brought in the The Prairie Farm Rehabilitation Administration (PFRA). The PFRA works with Prairie people to develop a viable agricultural industry and sustainable rural economy in Manitoba, Saskatchewan, Alberta and the Peace River Region of British Columbia. A key component of the PFRA is watershed management. Below, Morton reflects on what might be Canada’s greatest environmental program to date—even if it is little known outside a group of people labeled as “stubble jumpers.”

As a kid “from the East” I learned about the PFRA when I entered Grade 6 at Herchmer Public School in Regina. Our teacher, Miss Nygaard, taught us social studies from a book called “Lure of the West,” an unashamed promotional piece for co-ops, socialized medicine, public ownership of the means of production, distribution and life itself—including water. That meant, of course, the Prairie Farm Rehabilitation Act, a dramatic assault on the brutal reality of prairie drought and all its dreadful consequences for all who had been lured west by the Liberal promise of “The Last Best West.”

Not even Nygaard succeeded in drilling her socialist principles into my backbone, though I will never forget her response when I decided, all on my own, to canvass for George Drew, who had captivated me the night before at the Regina Armouries during the 1949 election.

When she opened the door to the Tories’ youngest canvasser, we were both equally dismayed. She, however, spoke: “You poor little boy,” were her words. My response was to scream.

PFRA really came home to me years later when I encountered Jim Gray’s book, Men Against the Desert, published in 1967, as a wholly sympathetic account of what the agency had accomplished. I came to it after his other bigger sellers: The Winter Stars, Booze, and Red Lights on the Prairies—but Men Against the Desert had a bigger influence.

Having abandoned Toryism within minutes of fleeing Nygaard’s doorstep, and having been more durably captivated by the CCF (The Co-operative Commonwealth Federation) and democratic socialism, I wanted to believe that legislation and human action could really make a difference. It seemed to me, then and since, Jim Gray’s version of PFRA provided the proof. Here was evidence that the path to desertification and environmental ruin had been reversed by Saskatchewan sweat, agrarian common sense, and a modest commitment of Federal cash. This wasn’t money wasted to destroy distant enemies or to assuage the greed of business profitiers in Toronto and Montreal. It was a program that made hard-working farmers able again to support their families by feeding a hungry world. As a city boy—then and still—I had only the vaguest notions about what it meant to use trash cover or to plough along the contours of a slope. The spring-time emergence of prairie sloughs and their cracked remnants after the baking July sun were sights we took for granted on family drives to Moose Jaw or up to Prince Albert, but Gray’s book on the PFRA humanized them as steps rural folks could take for the benefit of everyone destined to depend on the prairie ecology.

I don’t know whether the PFRA is Canada’s greatest environmental program. I suspect that folks labeled “stubble jumpers” shy away from grandiose claims. Somewhere in their genetic inheritance is the bitter memory of all those fancy-talk CFPR (Canadian Pacific Railway) copywriters who conned our ancestors into believing that a prairie homestead was the quickest route to wealth north of Las Vegas.

What I know is that, imperfectly and no doubt with much criticism from modern smarty-pants greenies, prairie farming was rehabilitated when we learned how to save the moisture we used to waste in the name of trying to make Saskatchewan look like England. It is not hard to make a much longer list of equally idiotic things we still take for granted for our much-abused old planet gets ready to teach us through a newer version of the Dirty Thirties.

by Desmond Morton

Desmond Morton is Hiram Mills Professor of History at McGill University
Divining Solutions to the global water crisis

Since 1970, Canada's International Development Research Centre has been helping developing-world scientists divine their own solutions to pressing development problems such as the growing water crisis. Our work in the South has important lessons for the North.

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It has been said that at the end of a leisure cruise, passengers are given a number of funny statistics about some of the items that were consumed during their travels, such as how many gallons of ice cream or shellfish passengers put away. Some of the statistics that cruise lines probably do not speak to their vacationers about is the amount of wastewater that is produced over the course of a typical one-week cruise. The Blue Water Network, a California-based environmental organization, notes that over the course of a one-week voyage a typical cruise ship generates more than 50 tons of garbage, 3,755,400 litres of greywater (waste water from sinks, showers, galleys, and laundry facilities), 704,850 litres of sewage, and 132,475 litres of oil-contaminated water. Greywater is the largest source of liquid waste generated by cruise ships and at this point can be legally pumped overboard practically everywhere that a ship may sail.

Despite pockets of political instability, international tourism continues to be one of the fastest growing economic sectors in terms of foreign exchange and job creation and has estimated annual revenues of US$1 trillion. Responsible tourism—otherwise known as ecotourism—can help to foster a relationship of cultural understanding between locals and tourists, and is an excellent way to experience, and gain some appreciation for, some of the world's natural wonders. Irresponsible tourism, however, can allow people to degrade the natural environment and perpetuate cultural stereotypes.

One of the fastest growing sub-sectors of the tourism industry is the cruise sector. A recent study of the cruise sector noted that in 2000, cruise demand reached almost 10 million trips, with North America accounting for two-thirds of that market share. And despite the drop in overall tourism post-9/11, the cruise industry continues to grow; between 2000 and 2006, capacity on these floating hotels is expected to increase by an additional 100,000 beds.

Unlike some other forms of tourism, the cruise sector is completely reliant on a clean, natural environment in order for the cruise experience to be fully enjoyed. Clean water and a thriving marine ecosystem provide a great deal of enjoyment for passengers and the views of the mountains from the deck of the ship are enjoyed a great deal more when the air is clean. The importance of a clean environment for the continual growth of the cruise industry is further reinforced by the fact that Conservation International notes that 70 per cent of all cruise destinations are found in biodiversity hotspots. When pulling into port at these locations, it is essential that in or-
traveller’s notebook

TOFINO ADVENTURES

Our relationship with water is complicated. In all its forms, it can bring joy, or signal despair. It can nourish or suffocate. It can bring life or it can bring death. The thing of it is, though, when we want to escape our daily lives, our stressors, all our crap, we generally seek it out. So we head to the lakes, to the rivers or to the sea to replenish our spirit whenever we get the chance.

We have to go drizzle boarding. Hopping into the Pacific Ocean to ride waves on a rain March day. The night before, we aren't the only ones. The smell of the salt fills my nostrils. I have to get back to the earthy atmosphere. But it's still cold, I mean freezing.

Crepuscular, cold, and damp we shuffle back our campsite and set up for a good night's sleep. We're only a few months away from Spring. Our walls are all lined with various objects. We have an Introduction to the Natural World, a Guide to Weather and Climate, and a Guide to the BC Rainforest. In the morning, we sit outside, sip on coffee and see the rain. Exploring Noowitsitpas Canyon, cold, and damp, we shuffle back our campsite and set up for a good night's sleep.

Water. It brings us life and it bares us away. Every time we separate from this water, the pain will still be there. The pain will still be there.

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Water. It brings us life and it bares us away. Every time we separate from this water, the pain will still be there. The pain will still be there.
This survey highlights the best water innovations within these Canadian municipalities, which also happen to be the largest urban population centres in Canada. We found some very interesting initiatives from coast to coast. These ideas and innovations are a good start, but until they are implemented throughout all our cities, we cannot say that we are nearing genuine or more holistic water management.

1 CITY OF VANCOUVER WATER EFFICIENCY HAS GONE BROADWAY ON CANADA’S WEST COAST

In 1995 the City of Vancouver staged its first performance of “The A2Z of HiXO”. This unique performance, featuring an array of characters, from the “evil” water waster and water thief, to a generic Ken and Barbie, educates children from kindergarten to grade three on water efficiency. The play, which is staged every two years, is produced and performed by Dream Rider Theatre—a Vancouver-based professional theatre group. Thus far, the show has been seen by almost 100,000 students in Vancouver and surrounding communities. Bringing the performance to the kids costs the City about $25,000. According to Sherman Ye, an engineer with the City, “This is money well spent if you compare it to some other educational strategies, such as mail-outs, which can cost up to $50,000 and with much of the educational materials ending up in the recycling box.”

By targeting young children, Vancouver’s water managers hope to make a lasting impression that translates into a new generation of water-wise citizens.

2 DISTRICT OF WEST VANCOUVER METERING FOR ALL

Water metering is a tough sell. Asking folks to pay by the litre when they are used to an “all you can eat” style flat rate is among a politician’s worst nightmares. That is why many cities opt for voluntary water metering programs. Not in West Vancouver. The District has opted for universal, mandatory water metering. In addition to long-term financial savings associated with reducing water use, installing all the meters at once allows the District to save additional money as compared to voluntary metering programs. Raymond Fung, Manager of Utilities in the District, points to the actions of local politicians in making this happen. Community leaders wanted to ensure all citizens played an equal part in conserving the community’s vital water resources—not just leaving efficiency to those with a “water conscience”. According to Fung, “political will was the key to ensuring a level playing field in terms of water metering in West Vancouver.”

3 CITY OF CALGARY SYSTEM CHANGE TO SOCIAL CHANGE

The City of Calgary is booming. New homes are being built, new businesses are springing up, mature ones are expanding—and water demand is rising. The City’s water managers have responded with one of Canada’s most elaborate water efficiency strategies, with initiatives ranging from an educational campaign to a toilet replacement program to repairing leaks in city water mains.

But what is truly unique about Calgary’s programs is the thinking behind it. Because Calgarians share their water sources, the Bow and Elbow Rivers, with other communities, rural populations, industrial users and irrigation districts, the total amount of water available to Calgary is finite. Add to this the fact that a primary source of these rivers—the glaciers of the Rocky Mountains—is shrinking, and accommodating water demands of a rapidly growing population is all the more challenging.

Calgary’s water efficiency strategy is designed to address this challenge. Accord- ing to Paul Fesko, Manager, Strategic Services with the City of Calgary, “our goal is to accommodate the projected population growth of 500,000 people over the next 25 years while ensuring that the total amount of water we extract from the Bow and Elbow Rivers does not exceed today’s levels.” This means current per capita demand of over 500 litres per day will have to be reduced to less than 350 litres per day by 2032.

The strategy is modeled on Natural Resources Canada’s National Guide to Sustai- nable Municipal Infrastructure. It takes a broad-based approach, with programs designed to foster change both in the water system and in social behaviour. Programs fall under seven thematic areas: leading by example; aligning policy with conservation objectives; source substitution; technology retrofit and incentives; providing technical assistance; developing a water ethic; and community outreach.

The source substitution theme highlights Calgary’s long-term, strategic thinking: “It is guided by the idea that water should be managed as a resource throughout its resi- dence in the community,” says Fesko. What this means is that, as the City grows, managers will begin to look to alternate sources of supply such as rainwater or recycled wastewater to meet water demands. In fact, the City is currently planning pilot tests of both approaches—creating a rainwater har- vesting demonstration site and supplying recycled wastewater to a local tree farm for irrigation. According to Fesko, “only with a broad-based, innovative approach to water efficiency will Calgary be able to accommo- date growth and do our part to preserve the health of Alberta’s rivers.”

4 CITY OF OTTAWA TARGETS, STRATEGY AND MEASURING PROGRESS IN THE NATION’S CAPITAL

Water managers in Ottawa are longstanding proponents of water efficiency having provided information to water customers looking to reduce consumption since the early 1990s. The 2001 amalgamation of eleven municipalities necessitated development of harmonized strategic policies for the new city.

To address this new strategy, the City has developed its Water Efficiency Strategy—a 10-year program designed to reduce wast- age and stave off expansion of drinking wa- ter treatment and pumping facilities over the long-term. Clearly defined targets and measuring progress are the keys to Otta- wa’s strategy.

Targets articulated in the strategy are to
DURHAM REGION

Water efficiency and urban design go hand-in-hand: Students save water
The Region and its partners, Tribute Communities and Natural Resources Canada, have taken the plunge to reveal the potential for water (and energy) efficiency by developing a water and energy efficient demonstration community.

The Hamlet, a Tribute development located on Taunton Road in Ajax, ON, includes 280 homes with upgrades to major water and energy consuming fixtures and appliances and drought tolerant landscaping. Each water efficiency upgrade will be measured for its water, energy and greenhouse gas reductions and a cost-benefit analysis will be calculated for each. As Glen Pleasance, Water Efficiency Coordinator with Durham Region notes, “efficiency just makes sense—in a region where population is expected to double in the next 20 years, growing infrastructure at a slower rate than population will save tens of millions of dollars.”

Additionally in Durham Region, summer means a role reversal for students—they become the teachers. Since 1997, the Region has been employing summer students to educate homeowners on lawn maintenance and outdoor water efficiency. The program employs a Community Based Social Marketing program, which seeks to change behaviour through education, demonstration and dialogue. Like most Canadian municipalities, Durham sees a 50 per cent increase in water use in summer due in large part to lawn watering. The student’s challenge is to reduce the summer peak water use and improve the health of lawns. Achieving these seemingly opposing goals is possible due to the amount of over watering that typically occurs.

But not just water is saved—it’s dollars, too. It was determined that for every dollar spent on the students, the Region saves two dollars on delayed water plant expansions. Program costs have since been cut in half, meaning that employing the students to save water now costs one quarter of expanding supply. According to Pleasance, “the key to the program is the personal contact between students and homeowners—our students are able to form a relationship with residents that results in a lasting commitment to outdoor water efficiency.”

reduce projected maximum daily demand by 25 per cent by 2006, and by 50 per cent by 2014. Meeting these targets is anticipated to save approximately $15 million in water infrastructure over the next 25 years.

But targets only define where you are heading—measuring progress along the way is equally important. As Sally McIntyre, Program Manager of Environmental Programs with the City of Ottawa, notes, “when you are investing the public’s money in programs like this, you need to be able to demonstrate results, and you can’t report on what you don’t measure.”

In terms of implementing the strategy, Ottawa has initiated a media campaign to inform the public on reducing outdoor water use. The campaign message: “If you want more than one inch per week, including rainfall”—is advertised on radio, television, in print, on billboards and in transit buses. In a stride away, the city has placed billboards near highway overpasses to the City’s satellite communities, where green grass abounds. The idea, according to McIntyre, “is to get the message to homeowners as they drive home from work pondering the evening yard work.” The billboards serve as a daily reminder that healthy lawns are water efficient lawns.

According to André Aubin, Directeur, Direction de plan et des technologies de l'eau with the City, “This project is the first step in addressing leakage problems—it will provide us with vital information needed to locate, quantify and repair leaks.”

Planners are also looking inward at the City’s big water users.ICI customers account for a large component of the City’s total water demand. To address this, plans are in place to install water meters for all ICI customers—over 23,000 meters in all. The metering data will identify the biggest water users, and will also be fed back to suppliers to illustrate how their water use compares to others in the ICI sector. Since Montrealeans pay for water through taxation, the data will also be used to scale taxes based on the amount of water they use or to develop an alternative way of charging the real cost of water management.

To address the long-term vision, managers are also looking outward. In developing the master plan and water efficiency programs, they are looking to other large Canadian cities and regions such as Calgary, the Greater Vancouver Regional District, Toronto and Halifax for best management practices. But they haven’t stopped there. They are also looking beyond to international examples, in particular to the International Water Association (IWA), a global network of water professionals in water management. By doing so, they hope to leverage the experience of others to find the best means for managing waste. As Aubin notes, “it is relatively easy to identify the problem; now, with local politicians on board, we have the direction and funding we need to begin developing the means.”

Karen Kun is co-editor of the Corporate Knights–Waterlution magazine and co-founder of Waterlution. Tony Maas is a research assistant with the POLIS Project with a focus on Urban Water Demand Management.

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“Water is the blood of the planet, we are disrupting the blood of the planet”

Professor Lucian Gill, Oceans-ESU, has been in industry (oil and gas/mining/chemical) all his working life as a professional chemist and engineer and has acted as a visiting professor in science with particular relevance to new types of bio-remediation on which he is a world authority. He currently works advising major oil companies on remediation of oil field waste and particularly on the cleaning up of produced waters. His present interests are in education for sustainable development. Tatiana met Lucian at the Be The Change conference in London, UK in May 2005 and invited Lucian to share some water wisdom and insights from his pioneering work in reed bed installations and cleaning oil water in the Sudan.

When did you become interested in water?

Eighty-eight years ago, when I was working on pollution issues for the old British gas industry which left a lot of contamination going into the water supply. That’s when I began to look seriously at what was happening in the water. As a classical chemist, I tried to use classical methods to clean the water but nothing worked. So I turned to reed beds, with the plant and soil to convert nutrients into food for the plant. If you were to put a toxin into the pot, it will shock the bacteria and may kill some. However, because the root mass is a living system it will respond and because this mass of a living system has hundreds of bacteria, it is sure to have one that will respond to that particular toxin. What is poisonous to others is food for itself. Therefore the bacteria multiply and by doing so destroy the toxin and protect the plant and the rest of the system. Another toxin may be reacted on by another bacterium, because the soil has the microbiological potential to find something to tackle the toxin.

How did you end up in the Sudan?

I was working in the field for years, in China, India, and had found through some experimentation with small beds of reeds that they could cleanse petrol, diesel and oil from water. The plants would fully and naturally destroy the toxins, literally eating the petrol from the contaminated water. [By the way, we are working on a project with BP to use oil and gas company waste water.]

COMPANIES RECOGNIZE THE BENEFITS AND ASK US IN. THERE ARE NO LOSERS IF WE UNDERSTAND AND WORK WITH THE ENVIRONMENT.

When you approach companies with the idea, do they all take the idea on board?

Yes, they take us in because they are seeing the real benefits of using natural systems. We have been approached by a number of oil companies, some of which have been in architecture and building. We then approached them to think about going to living systems, which would save them money in the long term. We are now talking with a number of companies about how to approach their problems in the future. We are working with a number of companies on a project to look at how to approach the problem of oil spills in the environment.

When did you meet Tatiana Glad?

I met Tatiana Glad through a number of oil companies. She is a consultant who works with a number of different companies to help them improve their water management. We met through a number of oil companies who were interested in using natural systems to improve their water management. Tatiana Glad is a consultant who works with a number of different companies to help them improve their water management. We met through a number of oil companies who were interested in using natural systems to improve their water management.

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GONE FISHIN’
Sustainably-sourced seafood

As World Ocean Day just came around on 8 June, Jessica Wenban-Smith from the Marine Stewardship Council investigated the state of the world’s fisheries and the availability of sustainably-sourced seafood in Canada.

For any environmental issue to make it to the lips of our political leaders, we can guess there is something serious behind it. If the words they are using include ‘desperate,’ ‘immediately,’ and ‘crisis,’ we should pay attention. A year ago, on World Environment Day 2004, UN Secretary-General Kofi Annan called for global action, saying, “The marine environment is facing challenges that, if not addressed immediately and effectively, will have profound implications for sustainable development.” Closer to home, Prime Minister Paul Martin described the situation as desperate, and called for “global courage” to address “one of the major environmental crises facing us today.”

The figures make alarming reading: 75 per cent of the world’s fisheries are fully exploited, over exploited or significantly depleted. Global fish catches have been declining at the rate of 0.7 million tons a year since 1998, but demand is steadily rising. Bycatch—the practice of discarding unwanted fish dead or dying—is officially estimated to account for about a third of everything we haul out of the water. And calls for Bluefin Tuna to be officially recognized as ‘endangered’ are getting louder.

Meanwhile, all we hear of international agreements—fish is delicious, fish is good for you, those scientists don’t know anything. The mixed signals are confusing, and there’s a strong temptation to leave it to someone else to sort out.

But ethical shopping for seafood has just gotten easier. Now you can really add ‘solve the global marine crisis’ to your grocery list. New to Canada since the start of the year, eco-labelled seafood products are the latest way to use your home-spend dollar to change the world for good. The Marine Stewardship Council (MSC) is an international non-profit organization promoting sustainable fishing practices through its fishery certification program. Any fishery that meets its strict environmental standard is entitled to place the MSC’s distinctive blue eco-label on their seafood packaging and labelling, so enabling consumers to pick out the clean and green seafood option.

Not everyone is confident the MSC’s approach is going to take off. Some seafood providers are uncertain about how the market will adapt, or are skeptical towards any conservation-minded organization intending to transform fishing practices. Yet the demise of the cod stocks off the Grand Banks in 1992 badly burned the fishing industry and local communities are still struggling. The commercial arguments for MSC certification are a strong alternative—reliable long-term supply, product differentiation and access to new markets. Of the four fisheries certified in the MSC’s first year of operation in 2000, all decided to seek re-assessment when their five-year certification came due for renewal this year. That is a great vote of confidence from the commercial fishing industry.

Producers and retailers have also stood behind the program, especially in Europe where consumers have been sensitized to the problem of over-fishing during years of controversial quotas. In Canada, the first retail outlet to sell MSC-labelled produce is Whole Foods Market, and it looks like more will come. With two BC fisheries—Salmon and Halibut—currently undergoing assessment, awareness of the program is set to increase.

And Canada could be big. Put bluntly, Canadians like fishing. More than four million Canadians list sport fishing as their favourite recreation activity, and the commercial sea fishing industry, although reduced, is still worth over $2 billion a year. Fish and fishing are built into the Canadian heritage and economic future.

So it’s no news to most Canadians that fishing has undergone a major revolution in the last decade and now, like many other industries, operates in a truly global market. Gone are the days when the fish on the table most likely came from Canadian waters. Both luxury and regular species are airfreighted fresh or shipped in giant ice-blocks from one continent to another. Local purchasing decisions made by Mom, Dad or Grandpa impact on fishing communities thousands of miles away.

This makes it even more important to make ethical choices. It is no exaggeration to say that lives and livelihoods depend upon secure and sustainable fish supplies. The seafood industry generates employment for two million people worldwide, and two billion people rely on fish as their primary source of protein, many of them in the developing world.

Initiatives like the MSC eco-label give fish lovers a rare opportunity to influence change in the world, with very little effort. The ethical dollar is set to grow in importance in the world’s fish markets, with sustainable sourcing rising high on the agenda and Canadian shoppers having the opportunity to be pioneers in this movement. Retailers and producers are closely watching uptake of sustainable seafood products and are listening to customer feedback. So if you think you care about fishing, if you love eating fish, if you want to see change—look for the logo. C&K

Jessica Wenban-Smith is Communications Manager for the Marine Stewardship Council (MSC). Before joining the fish business she worked in a variety of communications roles on environmental issues as diverse as transport, wildlife, climate change and forests.
In Jordan, the demand for freshwater already exceeds the supply. With no new sources to tap, Jordanians must find ways to reduce their demand and make better use of existing supplies. One option being pursued is greywater reuse. In a series of projects supported by Canada’s International Development Research Centre, the Inter-Islamic Network on Water Resources Development and Management (INWRDAM) has used inexpensive, simple, and effective technologies that allow individual households to reuse the wastewater they once poured down the drain.

Unlike blackwater from toilets, ‘greywater’—collected from laundry tubs, sinks, and showers—is easily treated at home and made safe for irrigating home gardens, says Dr Murad Bino, INWRDAM’s Executive Director. In the 25 low-income households where Dr Bino and his colleagues tested their greywater treatment units, the produce grown in family gardens is a vital source of food and income.

“Because we were dealing with people with limited means, cost was always a key consideration in developing our system,” says Dr Bino.

The units were constructed mainly of recycled and locally available materials such as 150-litre plastic barrels. Techniques used to build and install the systems were kept simple and required no special tools.

To overcome community skepticism, especially about odour and mosquitoes, the INWRDAM team enlisted the help of a local non-governmental organization trusted by the community. They trained community members to operate and maintain the units. The importance of reducing or eliminating household cleaning products from the greywater was emphasized, as was the need for regular maintenance.

As results from household pilot sites filtered in, researchers found new greywater converts within the community. Water meters revealed that an average of 37 per cent of the domestic water supply was being recovered as nutrient-rich greywater. Not only did this lower household water bills, it also reduced septic tank pumping fees. Family incomes increased by some $22 to $56 per month as a direct result of these savings and the improved crop yields from irrigating with greywater. This means that the cost of the units, which range from $100 to $600, can be recovered in two to three years.

In a community where the average family has six members and household incomes average $300 to $400 per month, these figures made economic sense.

Jordan’s government has also taken note of the Network’s success. The Ministry of Water and Irrigation examined the system’s potential in meeting the water needs of communities unlikely to be connected to the central sewage treatment system for 20 years. To ensure that the treated greywater met international irrigation standards, ministry officials monitored its quality for a year.

“Greywater from our treatment units meet the World Health Organization’s standard for restricted irrigation,” says Dr Bino. “This means it is fit for irrigating trees and crops that must be cooked before they are eaten.”

Within the Ministry of Public Works and Housing, INWRDAM’s expertise was tapped to help revise Jordan’s national building code to ensure that greywater is separated from blackwater in all future construction.

At the Ministry of Planning and Intergov- ernmental Cooperation, officials approved the installation of greywater units in more than 700 households in 9 metropolitan areas. With 300 additional units slated for installation and funding to promote water reuse in Jordan and across the region, INWRDAM’s greywater project appears to have struck gold.

By Kevin Conway

EGG GOULASH AND CLIMATE CHANGE IN CENTRAL EUROPE

Managing the future of Lake Balaton in Hungary

by James Allan

Last October, something special happened in Central Europe. In Guernsey, World Record was set at the 2nd Annual International Egg Festival in Slofo, Hun-gary. The egg, considered the last egg called the largest egg goulash. As the last cosseted an egg dish was consumed by hungry visitors and locals alike, another successful tourist season around Lake Balaton drew to a close.

Every summer a myriad of festivals are held in the Lake Balaton region. The events, which draw thousands of visitors a year, celebrate aspects of both local and national cultural heritage and history. While the communities and event managers compete with each other to attract the most tourists, the undisputed main attraction is Lake Balaton itself—the biggest lake in Central Europe and one of the largest shallow lakes in the world.

Home to 250,000 permanent residents, the population of the Lake Balaton area swells to 1.2 million people during the summer. Tourists from across Hungary, Austria, Germany and other European nations flock to Balaton’s warm waters, sandy beaches and the lovely countryside.

To Hungarians however, the Lake and its surrounding area serve as more than just a popular tourist destination. Known as the “Sea of Hungary,” Lake Balaton is the environmental gem of this landlocked country—many residents feel it is the spiritual centre of the nation. Its shores have hosted the unfolding of the country’s history. Celtic, Roman, Hun, Habsburg, Ot- toman and Communist influences have molded the area into how it appears today.

However, while the revolutions of history left their mark on the landscape of the lake, the main threats to regional stability in 2005 are local and global drivers of envi- ronmental degradation.

While the tourist season of 2004 was successful, this industry as well as the livelihoods of those benefiting from it is under threat from environmental changes. While the scenic beauty of the lake was never more obvious than during this time, this re- alization necessitated residents to change both how they perceived the lake, and their plans for its future development.

As strategic visions and long-term devel- opment plans for the region are now being designed, how can we make as a first priority the maintenance and improvement of the environmental health of the watershed? Power is slowly being transferred from the central government to regional and municipal authorities, therefore expanding local input and public participation in the deci- sion-making process. Major research ef- forts are currently underway to holistically examine the relationship between people and the environment so that future policies will increase regional resilience and adap- tive capacity to the effects of global climate changes. Some of the important questions being asked are how will the natural envi- ronment be altered, who will be impacted by these changes and what can be done now to prepare for them?

While the unique festivals are an impor- tant part of the overall tourist experience, without a healthy Lake Balaton people will not visit. With the importance of the latter concept firmly embedded in the minds of Balaton’s inhabitants and decision-makers, the future looks promising for this much loved part of Hungary.

As one local resident modestly said re- cently, “If people want water, they need nice water somewhere else. If they want hills, there are bigger hills somewhere else. If they want beautiful beaches, they can find more beautiful beaches somewhere else as well. What makes Lake Balaton special is the love the local people have for it and their desire to show visitors why they feel this way.”

James Allan is Environmental Project Manager with the Lake Balaton Development Coordination Agency.

An absolutely typical summer day

Lake Balaton—despite such ‘small’ details like pollution and floating dead fish—is still a popular destination for Hungarians and visitors alike, young and old.
The frog does not drink dry the pond in which it lives
  — Chinese Proverb

by Wendy Aupers

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